

Serial No.: 10/669,320

IN THE CLAIMS:

1. to 51. (Canceled)

52. (Currently Amended) A liquid crystal element according to ~~claim 51~~, further comprising:

a multitude of pixel electrodes;

a liquid crystal to which an electric field is applied by said pixel electrodes;

an inclined structure such that an electric field direction of the liquid crystal between at least one pair of adjacent pixels is inclined against an electrode plane; and

an opposite electrode that is disposed in parallel with said pixel electrodes; wherein

the liquid crystal is held between said pixel electrode electrodes and opposite electrode; and

such the inclined portion structure is such that a nonconductive portion is provided in a part of the opposite electrode which that is opposite to a gap between at least one pair of adjacent pixel electrodes; and

Serial No.: 10/669,320

a side of the pixel electrode is opposite to the opposite electrode, and the other side of the pixel electrode is opposite to the nonconductive portion.

53. (Previously Presented) A liquid crystal element according to claim 52, wherein:

said liquid crystal has such a structure that a four-sided minute pixel electrode is arrayed in a lattice in X, Y directions crossing each other at a right angle on a display plane and

said non-conductive portion comprises in view of Z direction at a right angle with X, Y directions when a pixel of i-th position in X direction and j-th position in Y direction from an edge point or a standard point is defined as  $p(i, j)$ ,

a first nonconductive portion, with a rectangular shape having a longer side in Y direction and a larger width in X direction than a distance between a pixel  $p(4m, 4n+1)$  and a pixel  $p(4m+1, 4n+1)$ , which includes an opposite electrode corresponding to each of at least a part of a gap between a pixel  $p(4m, 4n)$  [ $m, n$ : an integer] and a pixel  $p(4m+1, 4n)$  as well as at least a part of a gap between a pixel  $p(4m, 4n+1)$  and a pixel  $p(4m+1, 4n+1)$ ;

Serial No.: 10/669,320

a second nonconductive portion, with a rectangular shape having a longer side in X direction and a larger width in Y direction than a distance between a pixel p ( $4m+1$ ,  $4n+2$ ) and a pixel p ( $4m+1$ ,  $4n+3$ ), which includes an opposite electrode corresponding to each of at least a part of a gap between a pixel p ( $4m$ ,  $4n+2$ ) and a pixel p ( $4m$ ,  $4n+3$ ) as well as at least a part of a gap between a pixel p ( $4m+1$ ,  $4n+2$ ) and a pixel p ( $4m+1$ ,  $4n+3$ );

a third nonconductive portion, with a rectangular shape having a longer side in X direction and a larger width in Y direction than a distance between a pixel p ( $4m+2$ ,  $4n$ ) and a pixel p ( $4m+2$ ,  $4n+1$ ), which includes an opposite electrode corresponding to each of at least a part of a gap between a pixel p ( $4m+2$ ,  $4n$ ) and a pixel p ( $4m+2$ ,  $4n+1$ ) as well as at least a part of a gap between a pixel p ( $4m+3$ ,  $4n$ ) and a pixel p ( $4m+3$ ,  $4n+1$ ); and

a fourth nonconductive portion, with a rectangular shape having a longer side in Y direction and a larger width in X direction than a distance between a pixel p ( $4m+2$ ,  $4n+3$ ) and a pixel p ( $4m+3$ ,  $4n+3$ ), which includes an opposite electrode corresponding to each of at least a part of a gap between a pixel p ( $4m+2$ ,  $4n+2$ ) and a pixel p ( $4m+3$ ,  $4n+2$ ) as well as at

Serial No.: 10/669,320

least a part of a gap between a pixel  $p(4m+2, 4n+3)$  and a pixel  $p(4m+3, 4n+3)$ .

54. (Previously Presented) A liquid crystal element according to claim 52, wherein:

said liquid crystal element has a structure such that a four-sided minute pixel electrode is arrayed in a lattice in X, Y directions crossing each other at a right angle on a display plane and

said non-conductive portion comprises:

in view of Z direction at a right angle with X, Y directions when a pixel of  $i$ -th position in X direction and  $j$ -th position in Y direction from an edge point or a standard point is defined as  $p(i, j)$ ,

a first nonconductive portion, with a rectangular shape having a longer side in Y direction and a larger width in X direction than a distance between a pixel  $p(4m, 4n+1)$  and a pixel  $p(4m+1, 4n+1)$ , which includes an opposite electrode corresponding to each of at least a part of a gap between a pixel  $p(4m, 4n)$  [ $m, n$ : an integer] and a pixel  $p(4m+1, 4n)$  as well as at least a part of a gap between a pixel  $p(4m, 4n+1)$  and a pixel  $p(4m+1, 4n+1)$ ;

Serial No.: 10/669,320

a second nonconductive portion, with a rectangular shape having a longer side in X direction and a larger width in Y direction than a distance between a pixel p ( $4m+1$ ,  $4n+2$ ) and a pixel p ( $4m+1$ ,  $4n+3$ ), which includes an opposite electrode corresponding to each of at least a part of a gap between a pixel p ( $4m$ ,  $4n+2$ ) and a pixel p ( $4m$ ,  $4n+3$ ) as well as at least a part of a gap between a pixel p ( $4m+1$ ,  $4n+2$ ) and a pixel p ( $4m+1$ ,  $4n+3$ );

a third nonconductive portion, with a rectangular shape having a longer side in X direction and a larger width in Y direction than a distance between a pixel p ( $4m+3$ ,  $4n+3$ ) and a pixel p ( $4m+3$ ,  $4n+4$ ), which includes an opposite electrode corresponding to each of at least a part of a gap between a pixel p ( $4m+2$ ,  $4n+3$ ) and a pixel p ( $4m+2$ ,  $4n+4$ ) as well as at least a part of a gap between a pixel p ( $4m+3$ ,  $4n+3$ ) and a pixel p ( $4m+3$ ,  $4n+4$ ); and

a fourth nonconductive portion, with a rectangular shape having a longer side in Y direction and a larger width in X direction than a distance between a pixel p ( $4m+2$ ,  $4n+2$ ) and a pixel p ( $4m+3$ ,  $4n+2$ ), which includes an opposite electrode corresponding to each of at least a part of a gap between a pixel p ( $4m+2$ ,  $4n+1$ ) and a pixel p ( $4m+3$ ,  $4n+1$ ) as well as at

Serial No.: 10/669,320

least a part of a gap between a pixel  $p(4m+2, 4n+2)$  and a pixel  $p(4m+3, 4n+2)$ .

55. (Previously Presented) A liquid crystal element according to claim 52, wherein:

said liquid crystal element has a structure such that a four-sided minute pixel electrode is arrayed in a lattice in X, Y directions crossing each other at a right angle on a display plane and

said non-conductive portion comprises:

in view of Z direction at a right angle with X, Y directions when a pixel of  $i$ -th position in X direction and  $j$ -th position in Y direction from an edge point or a standard point is defined as  $p(i, j)$ ,

a first nonconductive portion, with a rectangular shape having a longer side in Y direction and a larger width in X direction than a distance between a pixel  $p(4m, 4n+1)$  and a pixel  $p(4m+1, 4n+1)$ , which includes an opposite electrode corresponding to each of at least a part of a gap between a pixel  $p(4m, 4n)$  [ $m, n$ : an integer] and a pixel  $p(4m+1, 4n)$  as well as at least a part of a gap between a pixel  $p(4m, 4n+1)$  and a pixel  $p(4m+1, 4n+1)$ ;

Serial No.: 10/669,320

a second nonconductive portion, with a rectangular shape having a longer side in X direction and a larger width in Y direction than a distance between a pixel p ( $4m+1$ ,  $4n+2$ ) and a pixel p ( $4m+1$ ,  $4n+3$ ), which includes an opposite electrode corresponding to each of at least a part of a gap between a pixel p ( $4m$ ,  $4n+2$ ) and a pixel p ( $4m$ ,  $4n+3$ ) as well as at least a part of a gap between a pixel p ( $4m+1$ ,  $4n+2$ ) and a pixel p ( $4m+1$ ,  $4n+3$ );

a third nonconductive portion, with a rectangular shape having a longer side in X direction and a larger width in Y direction than a distance between a pixel p ( $4m+3$ ,  $4n+1$ ) and a pixel p ( $4m+3$ ,  $4n+2$ ), which includes an opposite electrode corresponding to each of at least a part of a gap between a pixel p ( $4m+2$ ,  $4n+1$ ) and a pixel p ( $4m+2$ ,  $4n+2$ ) as well as at least a part of a gap between a pixel p ( $4m+3$ ,  $4n+1$ ) and a pixel p ( $4m+3$ ,  $4n+2$ ); and

a fourth nonconductive portion, with a rectangular shape having a longer side in Y direction and a larger width in X direction than a distance between a pixel p ( $4m+2$ ,  $4n$ ) and a pixel p ( $4m+3$ ,  $4n$ ), which includes an opposite electrode corresponding to each of at least a part of a gap between a pixel p ( $4m+2$ ,  $4n-1$ ) and a pixel p ( $4m+3$ ,  $4n-1$ ) as well as at

Serial No.: 10/669,320

least a part of a gap between a pixel  $p(4m+2, 4n)$  and a pixel  $p(4m+3, 4n)$ .

56. (Previously Presented) A liquid crystal element according to Claim 53, wherein:

said four-sided minute pixel electrode is rectangular in its plane shape; and

an area in which each of first to fourth nonconductive portions with a rectangular shape, which include said opposite electrode, overlaps with said rectangular pixel electrode has a narrower width in a direction of a longer side of the pixel electrode than a width in a direction of a shorter side of the pixel electrode, in view of Z direction.

57. (Previously Presented) A liquid crystal element according to Claim 53, wherein said four-sided minute pixel electrode is square in its plane shape.

58. (Previously Presented) A liquid crystal element according to Claim 53, wherein said four-sided minute pixel electrode is a pixel electrode for a color display in which a pixel for three primary colors is arrayed in a mosaic.

Serial No.: 10/669,320

59. (Previously Presented) A liquid crystal element according to Claim 56, wherein said four-sided minute pixel electrode is composed of three four-sided minor pixel electrodes for three primary colors, which are arrayed vertically to a direction of a longer side of said first to fourth nonconductive portions with a rectangular shape.

60. (Previously Presented) A liquid crystal element according to Claim 53, wherein said nonconductive portion with a rectangular shape is a nonconductive portion with a lap of  $2\mu\text{m}$  in which a width of its shorter side is larger by  $4\mu\text{m}$  or more than a gap between two opposite pixels through its longer side.

61. (Previously Presented) A liquid crystal element according to Claim 53, comprising a group of minor nonconductive portions which include an opposite electrode corresponding to at least a part of a gap between two opposite pixel electrodes or minor pixel electrodes through two longer sides of the nonconductive portion, instead of at least one of said first to fourth nonconductive portions.

Serial No.: 10/669,320

62. (Previously Presented) A liquid crystal element according to claim 52, wherein:

said liquid crystal element has a structure such that a four-sided minute pixel electrode is arrayed in a delta system for a color display on a display plane and

said non-conductive portion comprises:

when a pixel row of  $i$ -th position from a bottom side upward is defined as  $q(i)$  and

a group of three adjacent pixels of red, green and blue, which is composed of one of red, green and blue pixels in an odd pixel row  $q(2m+1)$  [ $m$ : an integer] and one of red, green and blue pixels in an even pixel row  $q(2m+2)$ , is defined as a group of pixels for a color display and

a group of pixels for a color display of  $j$ -th position from a left side on  $q(2m+1)$  and  $q(2m+2)$  is defined as  $Gq(j)$ ,

a first T-shaped nonconductive portion which includes an opposite electrode corresponding to each of at least a part of a gap between two adjacent pixels on  $q(2m+1)$  in a group of pixels for a color display composed of two pixels on  $q(2m+1)$  and a pixel on  $q(2m+2)$  as well as at least a part of a pixel on  $q(2m+2)$  facing said two pixels on  $q(2m+1)$ ;

Serial No.: 10/669,320

a first reverse T-shaped nonconductive portion adjacent to said first T-shaped nonconductive portion, which includes an opposite electrode corresponding to each of at least a part of a gap between two adjacent pixels on  $q(2m+2)$  in a group of pixels for a color display composed of a pixel on  $q(2m+1)$  and two pixels on  $q(2m+2)$  as well as at least a part of a pixel on  $q(2m+1)$  facing said two pixels on  $q(2m+2)$ ;

a second T-shaped nonconductive portion shifted leftward by a pixel from said first T-shaped nonconductive portion, which includes an opposite electrode corresponding to each of at least a part of a gap between two adjacent pixels on  $q(2m+3)$  in a group of pixels for a color display composed of two pixels on  $q(2m+3)$  and a pixel on  $q(2m+4)$  as well as at least a part of a pixel on  $q(2m+4)$  facing said two pixels on  $q(2m+3)$ ;

a second reverse T-shaped nonconductive portion adjacent to said second T-shaped nonconductive portion, which includes an opposite electrode corresponding to each of at least a part of a gap between two adjacent pixels on  $q(2m+4)$  in a group of pixels for a color display composed of a pixel on  $q(2m+3)$  and two pixels on  $q(2m+4)$  as well as at least a part of a pixel on  $q(2m+3)$  facing said two pixels on  $q(2m+4)$ ;

Serial No.: 10/669,320

a third T-shaped nonconductive portion shifted leftward by a pixel from said second T-shaped nonconductive portion, which includes an opposite electrode corresponding to each of at least a part of a gap between two adjacent pixels on  $q(2m+5)$  in a group of pixels for a color display composed of two pixels on  $q(2m+5)$  and a pixel on  $q(2m+6)$  as well as at least a part of a pixel on  $q(2m+6)$  facing said two pixels on  $q(2m+5)$ ; and

a third reverse T-shaped nonconductive portion adjacent to said third T-shaped nonconductive portion, which includes an opposite electrode corresponding to each of at least a part of a gap between two adjacent pixels on  $q(2m+6)$  in a group of pixels for a color display composed of a pixel on  $q(2m+5)$  and two pixels on  $q(2m+6)$  as well as at least a part of a pixel on  $q(2m+5)$  facing said two pixels on  $q(2m+6)$ .

63. (Original) A liquid crystal element according to Claim 62, comprising:

a longitudinal minor nonconductive portion forming a longitudinal area of the nonconductive portion between adjacent pixels in the same pixel row;

a lateral minor nonconductive portion forming a lateral area between said adjacent pixels and a pixel in the same group

Serial No.: 10/669,320

of pixels for a color display as said adjacent pixels, which is opposite to both of these pixels; and

a cutting portion of the nonconductive portion dividing said longitudinal minor nonconductive portion and said lateral minor nonconductive portion, instead of at least one of said first to third T-shaped and reverse T-shaped nonconductive portions.

64. (Previously Presented) A liquid crystal element according to Claim 62, wherein said longitudinal minor nonconductive portion and lateral minor nonconductive portion instead of at least one of said first to third T-shaped and reverse T-shaped nonconductive portions is a nonconductive portion with a lap of  $2\mu\text{m}$  having a common area with a width of at least  $2\mu\text{m}$ , in view of Z direction at a right angle with a display plane on which a pixel is arrayed.

65. (Canceled)